304L Stainless Steel, UNS S30403

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire
AMS 5511, ASTM A240, ASTM A666

304L Alloy Description

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Alloy 304L is an extra low-carbon variation of 304 making it useable in the “as-welded” condition (without annealing), even in severe corrosive conditions. The alloy has oxidation resistance to a maximum temperature of 1650°F (899°C) continuously without appreciable scaling. The maximum temperature for intermittent exposure is 1500°F (816°C).

Applications

Applications where welding is required
Water well screens
Food processing screens
Architectural Screens
Medical Parts
Surgical Parts
Tubing
Flexible Metal Hose
Bellows

Chemistry Typical

Carbon: 0.03 max
Chromium: 18.00– 20.00
Manganese: 2.0 max

Nickel: 8.00– 12.00
Phosphorus : 0.045 max
Silicon: 1.0 max
Sulphur : 0.03 max
Iron: Balance

Physical Properties

Density: 0.29 lbs/in^3, 8.03 g/cm^3

Electrical Resistivity: microhm-in, (microhm-cm)

At 68.0°F (20°C): 28.4(72)
At 1200°F (659°C): 45.8(116)

Specific Heat, BTU/lbs./°F (kJ/kg•K):
32-212°F (0-100°C): 0.12 (0.50)

Thermal Conductivity, BTU/hr/ft^2/ft/°F (W/m•K)
At 212°F (100°C): 9.4 (16.2)
At 932°F (500°C): 12.4 (21.4)

Mean Coefficient of Thermal Expansion, in/in/°F (µm/m•K))
32-212°F (0-100°C): 9.4 x 10^{-6} (16.9)
32-600°F (0-315°C): 9.6 x 10^{-6} (17.3)
32-1000°F (0-538°C): 10.2 x 10^{-6} (18.4)
32-1200°F (0-649°C): 10.4 x 10^{-6} (18.7)

Modulus of Elasticity, KSI (MPa) 28.0 x 10^3 (193 x 10^3) in tension 11.2 x 10^3 (78 x 10^3) in torsion

Magnetic Permeability, H = 200 Oersteds Annealed: <1.02 max

Melting Range, °F (°C): 2550-2650 (1399-1454)

Mechanical Properties at Room Temperature

Annealed Condition Typical
Ultimate Tensile Strength: 70 KSI (485 MPa)
Yield Strength: 25 KSI (170)
Elongation: 40%
Hardness: B88

Tempered Condition
304L can be cold rolled to various tempers. Contact Ulbrich Wire Technical Service for additional information

Additional Properties

Corrosion Resistance Refer to NACE (National Association of Corrosion Engineers) for recommendations.

Standard Wire Finishes
Extra Clean: (XC) Extra clean is also referred to as “bright annealed” or “bright annealed and cold rolled”
Grease (round wire only): Drawn in a heavy grease produces an “Ultra bright” finish for decorative applications
Soap (round wire only): Soap is used as a lubricant in the drawing process and is not removed. It acts as a lubricant during customer part forming operation. A soap finish is available in tempered products.
Plated: Many plating options are available.
*Special finishes are available: Contact Ulbrich Wire Sales with special finish and plating requests.

Forms
Continuous Coils
Cut to lengths
Precision cutting

Cold Forming Alloy 304L is ductile and can be cold worked by stamping, drawing, bending or forming methods.

Heat Treatment Alloy 304L cannot be heat treated for hardness. Hardness can only be

achieved by cold working.

Welding Refer to SSINA's 'Welding of Stainless Steels and Other Joining Methods' for best practices.

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